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(54) Title: POLYMORPHIC OLFACTORY RECEPTOR GENES AND ARRAYS, KITS AND METHODS UTILIZING THEM

(57) Abstract: An oligonucleotide comprising a nucleic acid sequence selected suitable for identifying an olfactory receptor gene or an allelic variant thereof is provided.

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INTERNATIONAL SEARCH REPORT

In: [REDACTED] Application No
PCT/IL 03/00336

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal, Sequence Search, EMBASE, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | DATABASE GENE BANK [Online] 2 November 2000 (2000-11-02), WHITAKER: "Homo sapiens olfactory receptor, family 10, subfamily C, member 1 (OR10C1), mRNA" XP002251795 Database accession no. NM_013941 abstract | 1-31 |
| A | ----- DATABASE HGBASE [Online] 9 July 2001 (2001-07-09), YUSUKE NAKAMURA: "SNP in the OR10C1 gene" XP002251796 Database accession no. SNP000568915 abstract ----- -/- | |

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

20 August 2003

Date of mailing of the international search report

18.12.2003

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/IL 03/00336

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| A | <p>SHARON ET AL.: "Identification and characterization of coding single-nucleotide polymorphisms within a human olfactory receptor gene cluster" GENE, vol. 260, 2000, pages 87-94, XP002949038 the whole document</p> <p>-----</p> | |
| A | <p>GILAD ET AL.: "Dichotomy of single-nucleotide polymorphism haplotypes in olfactory receptor genes and pseudogenes" NATURE GENETICS, vol. 26, 2000, pages 221-224, XP002218193 the whole document</p> <p>-----</p> | |

INTERNATIONAL SEARCH REPORT

ational application No.
PCT/IL 03/00336

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 7-9, 12-15, 18-20, 23 and 24 (all partially)
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-33 (all partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 7-9, 12-15, 18-20, 23 and 24 (all partially)

Claims 7-9, 12 and 13, and 14, 15 and 18-20, refer to kits/arrays, respectively, for identifying an OR gene or variant thereof, comprising at least an oligonucleotide suitable for identifying it. The claims cover all kits/arrays comprising oligonucleotides having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such kits/arrays. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be clear, supported and disclosed, namely those parts relating to SEQ ID Nos. 1-104.

The above reasoning also applies to claims 23 and 24, which refer to methods of typing a subject, wherein the methods comprising detecting the presence or absence of allelic variants of OR (pseudo)genes. For the above mentioned reasons, the search has also been limited to those parts relating SEQ ID Nos. 1-104.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-33 (all partially)

Invention 1

Oligonucleotides (constructs) corresponding to SEQ ID Nos. 1, 27, 53 and 79; kits, arrays and cells comprising them; and methods using them

2. claims: 1-33 (all partially)

Invention 2

Oligonucleotides (constructs) corresponding to SEQ ID Nos. 2, 28, 54 and 80; kits, arrays and cells comprising them; and methods using them

Inventions 3-26

Ibidem for SEQ ID Nos. 3-26, 29-52, 55-78 and 81-104, respectively
